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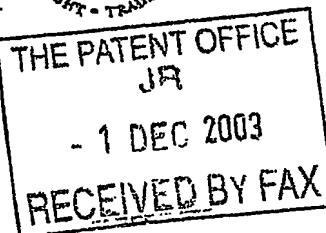
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The Patent Office

Cardiff Road
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- 1 DEC 2003

1. Your reference

RD 449

2. Patent application number

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0327823.1

01DEC03 FA56202-1 001886

P01/7700 0.00-0327823.1

3. Full name, address and postcode of the or of each applicant (underline all surnames)

British American Tobacco (Investments) Limited
Globe House
1 Water Street
London WC2R 3LA
07515778003

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

England & Wales

4. Title of the invention

Machine and Process for Packing Smoking Articles

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Patents Department
British American Tobacco
R&D Centre
Regents Park Road
Southampton SO15 8TL

Patents ADP number (if you know it)

07515778004

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

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7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

YES

- a) any applicant named in part 3 is not an inventor, or
 - b) there is an inventor who is not named as an applicant, or
 - c) any named applicant is a corporate body.
- (See note (d))

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Continuation sheets of this form

Description

Claim(s)

Abstract

Drawing(s)

8

8

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

Lucy E Henderson

Date 1st December 2003

12. Name and daytime telephone number of person to contact in the United Kingdom

Ms. Lucy Henderson

02380 793727

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Patents Form 1/77

Machine and Process for Packing Smoking Articles

This invention relates to machines and processes for packaging smoking articles such as cigars, cigarillos and cigarettes, all of which articles will be referred to herein for simplicity as "cigarettes".

We are concerned here with a novel form of packaging as disclosed in our co-pending UK application No. GB0305661.1 in which there is provided a smoking article blank, the blank comprising a lid portion and a base portion, the lid portion and the base portion being interconnected along a hinge line and the base portion comprising a first main panel, a second main panel and a bottom panel, each panel being defined by longitudinal side margins, the first and the second main panels each having side panels, which side panels depend from the longitudinal margins of the first and second main panels, at least one of the side panels having a side flap depending from a longitudinal margin thereof, the bottom panel having a line of perforation extending between the longitudinal margins thereof, and the side flap being connected to the adjacent side panel by a hinge line. There is also provided a plurality of inner blanks, which inner blanks may be used in combination with the above-described smoking article blank. When erected, each inner blank is capable of enwrapping a bundle of smoking articles

In particular the machine and process are able to produce a pack for cigarettes from the blanks disclosed in GB0305661.1.

The present invention provides a machine for assembling a pack of GB0305661.1.

The present invention further provides a method of assembly for the pack of GB0305661.1.

The machine of the present invention comprises first, second and third packing machines, the first machine assembling a blank A about a first bundle of cigarettes, the second machine assembling a blank B about a second bundle of cigarettes and the

third machine assembling a blank C about a pack assembly, which pack assembly AB comprises erected blanks A and B.

Preferably the first machine comprises a blank feed from which a blank A is conveyed into a folding station. Suitably the folding station may comprise a rounded pocket when the blank A has rounded longitudinal side margins. In an alternative arrangement the folding station may comprise a pocket suitable for a blank A having square or bevelled longitudinal margins.

Preferably the first machine further comprises an indexed advancing mechanism whereby a pre-wrapped bundle of cigarettes is advanced onto the blank A. Preferably blank A is folded about the bundle of cigarettes within the first machine according to the process of the present invention.

Preferably the first machine comprises inverting means whereby the erected blank assembly is inverted before being conveyed by conveying means to a third machine.

It is much by preference that the inverting means is a unit whereby the erected blank A is inverted under the action of gravity, the inverting means conveys the erected blank assembly through 180° through an arcuate feed path.

Preferably the second machine comprises a blank feed from which a blank B is conveyed into a folding station. The second machine further comprises an indexed advancing mechanism whereby a pre-wrapped bundle of cigarettes is advanced onto the blank B. Preferably blank B is folded about the bundle of cigarettes within the second machine according to the process of the present invention.

Advantageously the erected blank assembly is conveyed by conveying means from the second machine to a third machine.

It is much by preference that the conveying means of the first and second machines are conveying belts.

Advantageously the conveying means of the first and second machines are adjacent one another in offset, parallel relation. Suitably the conveying means of the

second machine is positioned to be lower than the conveying means of the first machine.

The third machine comprises a blank feed from which a blank C is conveyed into a folding station.

Within the third machine a pack assembly (AB) comprising the erected blank assemblies of A and B stacked one over the other is formed. Preferably erect blank assembly B is positioned below erected blank assembly A. Erected blank assembly B is pushed by means of an indexed advancing means from the conveying means joining the second machine and the third machine; and erected blank assembly A is pushed by means of an indexed advancing means from the conveying means joining the first machine and the third machine such that erected blank assembly A rests on top of erected blank assembly B. Preferably the pack assembly AB comprises erected blank assemblies A and B in alignment one with the other. Suitably the pack assembly AB is advanced onto blank C by an indexed pushing mechanism. Blank C is folded about pack assembly AB according to the process of the present invention.

Advantageously the third packing machine also comprises cutting means for cutting the line of perforation on the bottom wall of blank C (later described). It is much by preference that the cutting means is a knife.

Preferably the third packing machine also comprises an end sealing means. Preferably the end sealing means is a foam belt. Even more preferably the end sealing means is a continuous belt.

Preferably the conveying means joining the first and third and joining the second and third machines further comprise sensors. Preferably the sensors are operable to detect a shortage of erected blanks A and/or B on the conveying means. It is much by preference that the sensors are in communication with the first, second and third machines such that the operating speeds of the machines are controlled in accordance with a supply-demand relationship between the three machines.

The present invention further provides a method of assembly of a smoking article pack the method comprising wrapping a first bundle of smoking articles in a wrapper, feeding a first blank A to a first pack assembly machine, partially erecting the first blank A, plunging the wrapped bundle of smoking articles into the partially erected first blank A, completely erecting the first blank A about the wrapped bundle of smoking articles, wrapping a second bundle of smoking articles in a wrapper, feeding a second blank B to a second pack assembly machine, partially erecting the second blank B, plunging the second wrapped bundle of smoking articles into the partially erected second blank B, completely erecting the second blank B about the second wrapped bundle of smoking articles, forming a pack assembly AB from the erected blanks A and B, feeding a third blank C to a third pack assembly machine, partially erecting third blank C, plunging pack assembly AB into the partially erected third blank C, completely erecting the third blank C about the pack assembly AB.

In order that the invention be easily understood and readily carried into effect, reference will now be made, by way of example, to the accompanying diagrammatic drawings in which:

Figure 1 shows blank A;

Figure 2 shows blank B;

Figure 3 shows blank C;

Figure 4 shows blank A being erected according to the process of the present invention;

Figure 5 shows blank B being erected according to the process of the present invention;

Figure 6 shows blank C being erected according to the process of the present invention;

Figure 7 shows a process flow diagram for the process of the present invention;

Figure 8 shows a representation of the first, second and third machines of the present invention.

Figures 1 to 3 depict blanks A, B and C respectively. Blanks A, B and C are erected according to the process of the present invention. Features common to more than one Figure will be denoted by the same reference numeral.

In Figure 4 a first blank (A) is supplied to a first packing machine (not shown) from a stack of blanks A. The first blank A is fed through the machine such that the outer face thereof faces downwardly. The inner side panels (4, 5) are folded along fold lines (8, 9) which fold lines are of a rounded configuration. In an alternative arrangement fold lines 8, 9 may be of a squared or bevelled configuration. A bundle of thirteen cigarettes 16, which bundle has been previously foil wrapped (not shown) is fed into the first blank A and positioned between the folded side panels (4, 5). Base wall panel 3 is folded about fold line 12 and again about fold line 13, such that inner main wall 2 is in contact with wrapped bundle 16. Adhesive is applied to side panels 6 and 7. Side panels 6 and 7 are folded about fold lines 10 and 11 thus wrapping bundle 16. Side panels 6 and 7 adhere to the outer of side panels 4, 5 respectively. Lugs 14 and 15 of blank A facilitate closure of the lid of the fully assembled smoking article pack. The resultant bundle is inverted before conveying the bundle to the third machine.

In Figure 5 a second packing machine (not shown) contains a stack of a second blank B (not shown). A second blank B is removed from the base of the stack and side panels 24 and 25 are folded along fold lines 28 and 29 respectively. A pre-wrapped bundle of cigarettes 34 is fed into the second blank B such that the bundle of cigarettes 34 is positioned on inner main wall 21 between side panels 24 and 25. Base wall portion 23 is folded about the base of the bundle of cigarettes 34 by folding about fold lines 32 and 33. Folding the second blank B about fold line 33 brings outer main wall 22 adjacent the outer wall of the bundle of cigarettes 34. Adhesive is applied to side panels 26 and 27, which side panels are then folded about fold lines 30, 31. Side panels 26 and 27 adhere to the outer of side panels 24, 25 respectively.

A cut out portion 35 allows access to the bundle of cigarettes in the fully assembled pack.

The first and second assembled blanks are positioned one on top of the other to provide pack assembly AB. Access to the cigarettes in bundles 16 and 34 is gained through cut out portions 17 and 35 respectively in the fully assembled pack.

The assembled blanks are then fed to a third packaging machine (not shown) wherein a third blank C is assembled around the pack assembly AB.

In Figure 6 a third blank C is fed into a third packaging machine (not shown). Adhesive is applied to the front lid wall 43 adjacent inner front lid flap 45. The inner front lid flap 45 is folded about fold line 74 and adhered to front lid wall 43. Adhesive is applied to side panels 48 and 49 and to back main wall 41. Side flaps 50 and 51 are folded into an upright position along fold lines 67 and 68 respectively. Top flaps 52 and 53 are folded out of the plane of side flaps 50 and 51 along respective fold lines 69 and 70. Side panels 48 and 49 are erected along fold lines 63 and 64 and the pack assembly AB is plunged into the partially erected third blank C onto back main wall 41 such that the outer of inner main wall 21 adheres to back main wall 41. Side panels 48 and 49 are adhered to the outer of side panels 26 and 27 of blank B. Top flaps 52 and 53 are folded along fold lines 69 and 70 so as to rest adjacent the top of bundles 16 and 34.

Adhesive is applied to top wall 42, base wall portion 44 and front main wall 40. The third blank C is then erected about the pack assembly AB by folding base wall 44 along fold lines 60 and 62 such that front main wall 40 encloses the pack assembly AB. Outer main wall 1 adheres to front main wall 40. Base wall portion 44A is adhered to the outer of base wall portion 3 of blank A, and base wall portion 44B is adhered to the outer of base wall portion 23 of blank B. Top flaps 52 and 53 adhere to top wall 42.

The lid of the smoking article pack is assembled from third blank C by folding along fold lines 66 and 73. Lid side flaps 54 and 55 are folded along fold lines 71 and 72 respectively. Adhesive anchors lid side flaps 54 and 55 to the outer of side flaps 50 and 51 when the blank is erected. Side panels 47 and 46 are folded along fold lines 58 and 57. Side panel 46A adheres to the outer of side panel 7 of erected blank A. Side panel 46B adheres to the outer of side panel 48 of erected blank C. Side panel 47 adheres to the outer of side panel 6 of blank A.

The base wall panel is then cut into two portions 44A and 44B along line of perforation 61 by a knife (not shown).

Figure 7 depicts the process of the present invention by diagrammatic representation.

Figure 8 shows the first, second and third packing machines of the present invention. A first packing machine 80 erects blank A (not shown) according to the process of the present invention. The erected blank is inverted (not shown) under the action of gravity, the erected blank then being conveyed to the third packing machine 82 by conveying means 83. A second packing machine 81 erects blank B (not shown) according to the process of the present invention. The erected blank is conveying to the third packing machine 82 by conveying means 84. The conveying means 83 and 84 have sensors 85 which sensors control the relevant operating speeds of the first, second and third packing machines 80, 81 and 82.

The erected smoking article pack is able to hinge into an open position by means of hinging the lid position along hinge line 65. The erected pack may be hinged into a fully open position after hinging open the lid, by hinging about hinge line 59.

Access to the cigarette bundles in the open position of the smoking article pack is gained via cut out portion 56 in the erected third blank C. Access to the cigarette bundles in the fully opened position may be gained via cut out portions 17 and 35 of blanks A and B respectively.

The machine for assembling the first, second and third blanks A, B and C comprises three packaging machines.

The first machine assembles first blank A according to the process described hereinabove. The second machine assembles second blank B according to the process described hereinabove.

Assembled blanks A and B are fed in parallel relation from first and second machines. A third machine first places an erected first blank A above erected second

blank B. The third machine assembles third blank C about pack assembly AB according to the process described hereinabove.

The resulting smoking article pack is transferred from the third machine to a further machine in which the smoking article pack is overwrapped according to a process well known to a person skilled in the art. It is much by preference that the smoking article pack is overwrapped with cellophane.

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Figure 1

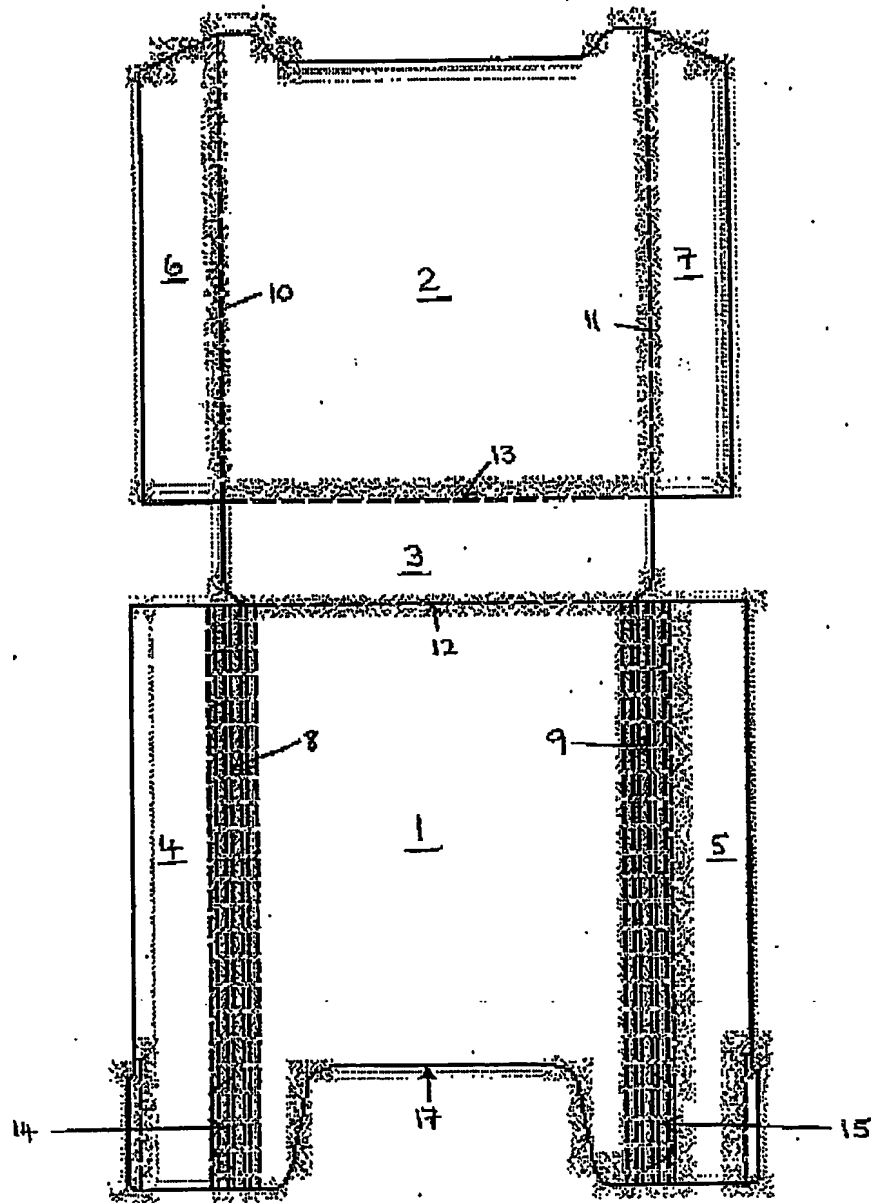


Figure 2

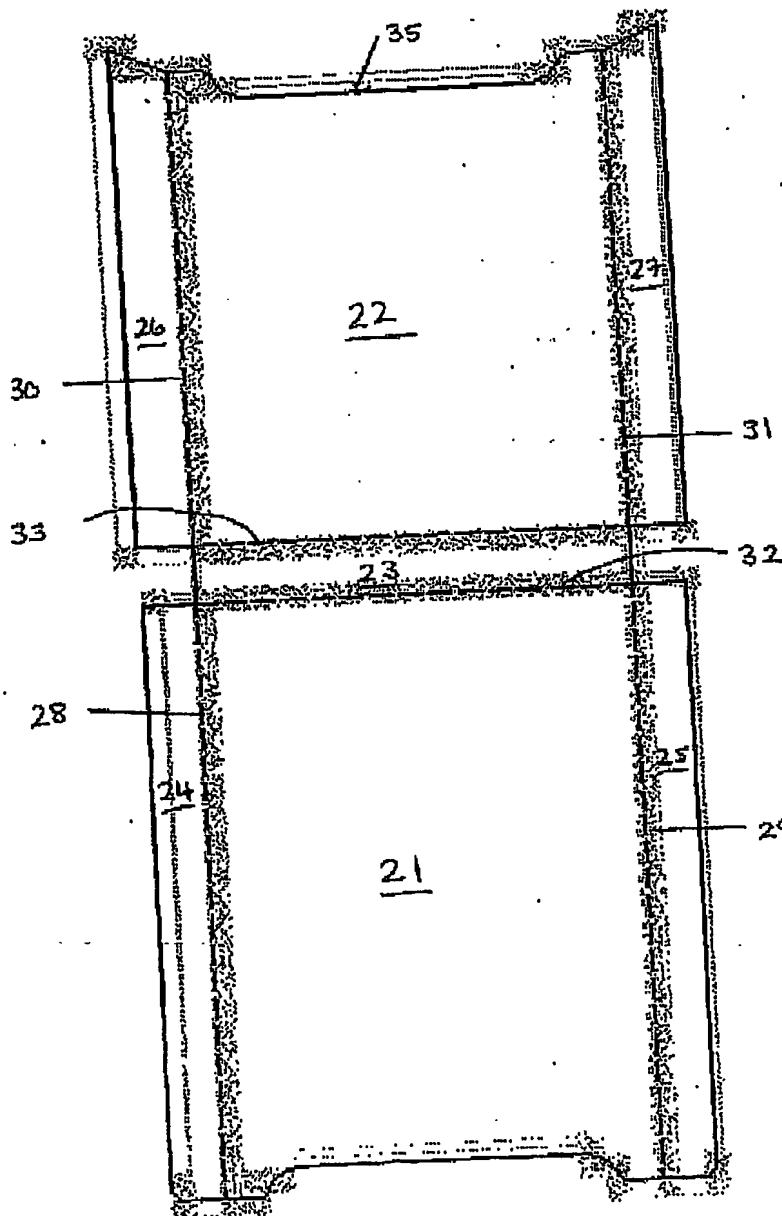
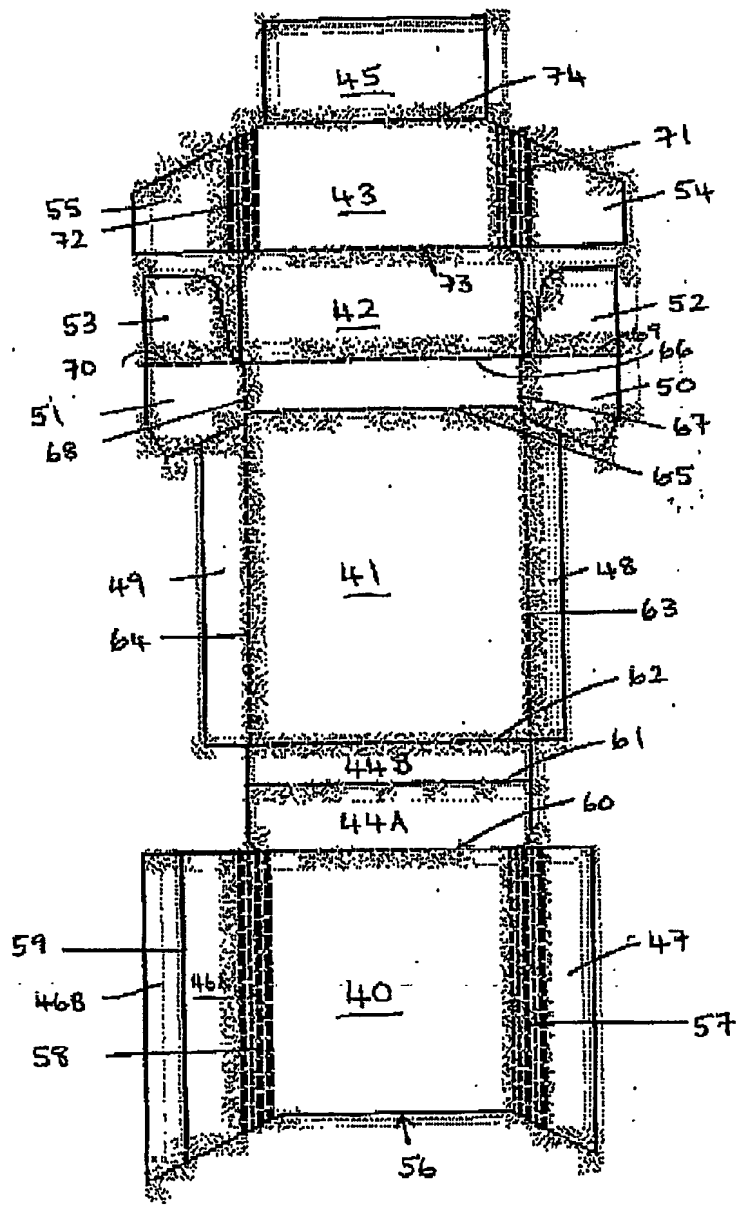


Figure 3



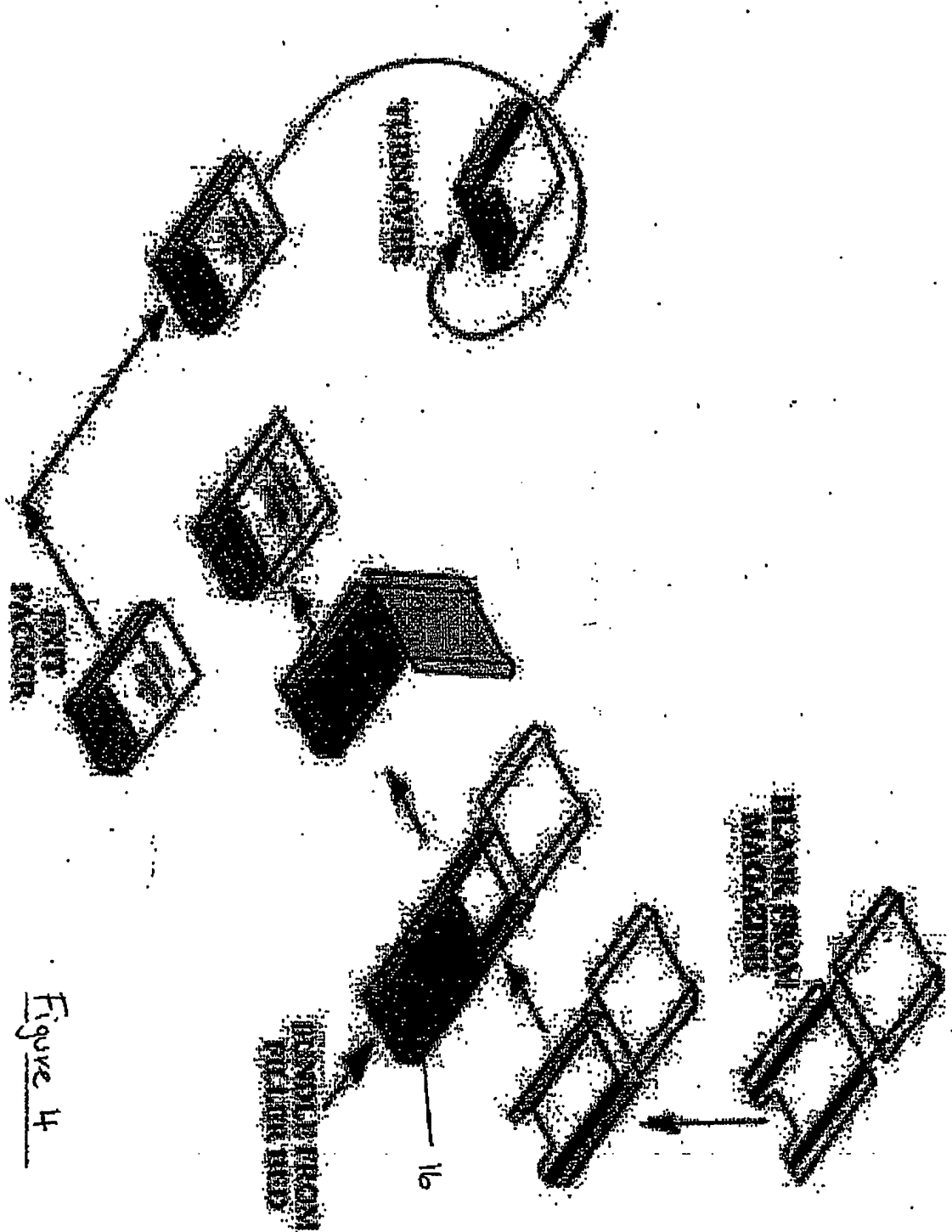
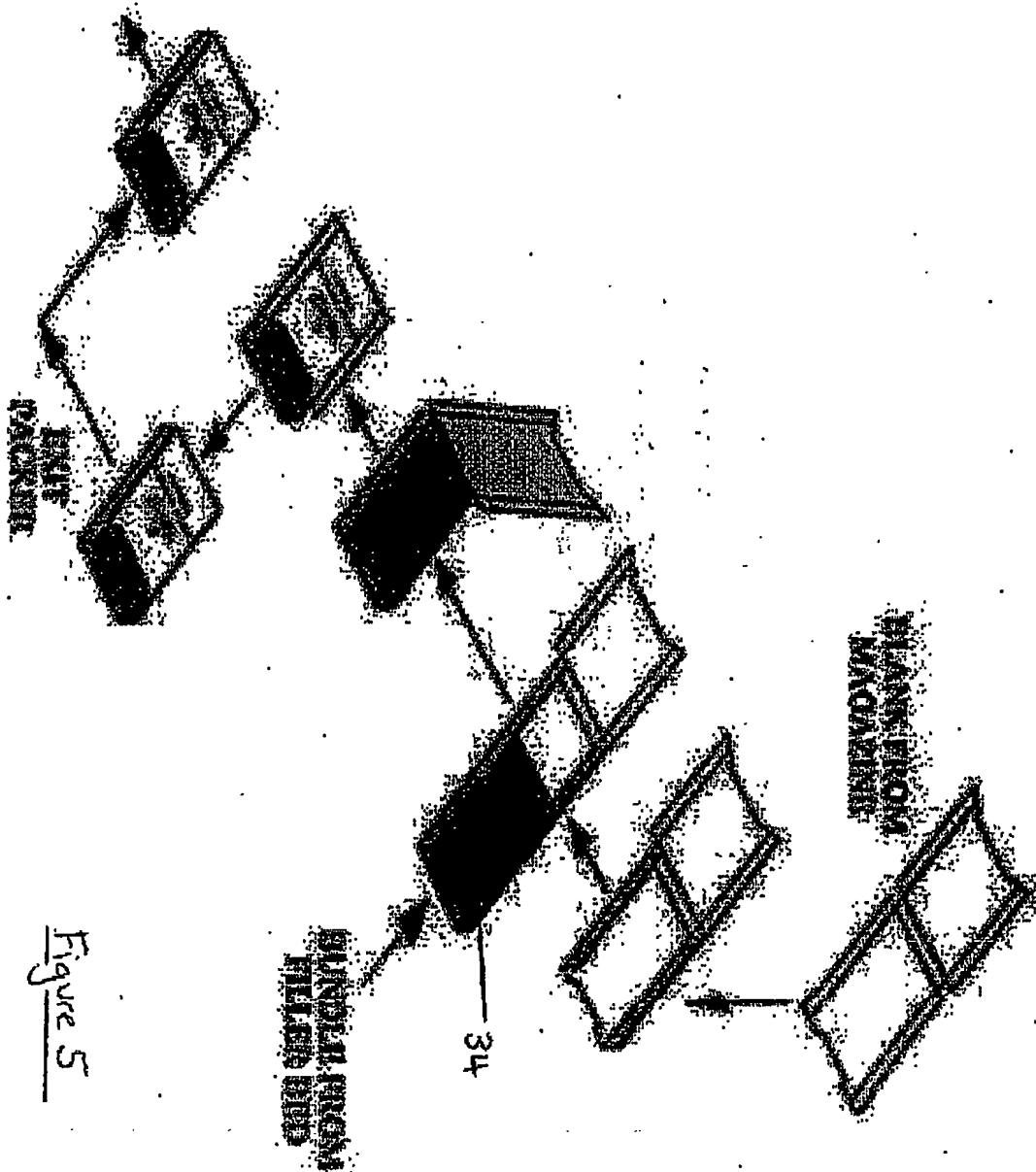


Figure 4



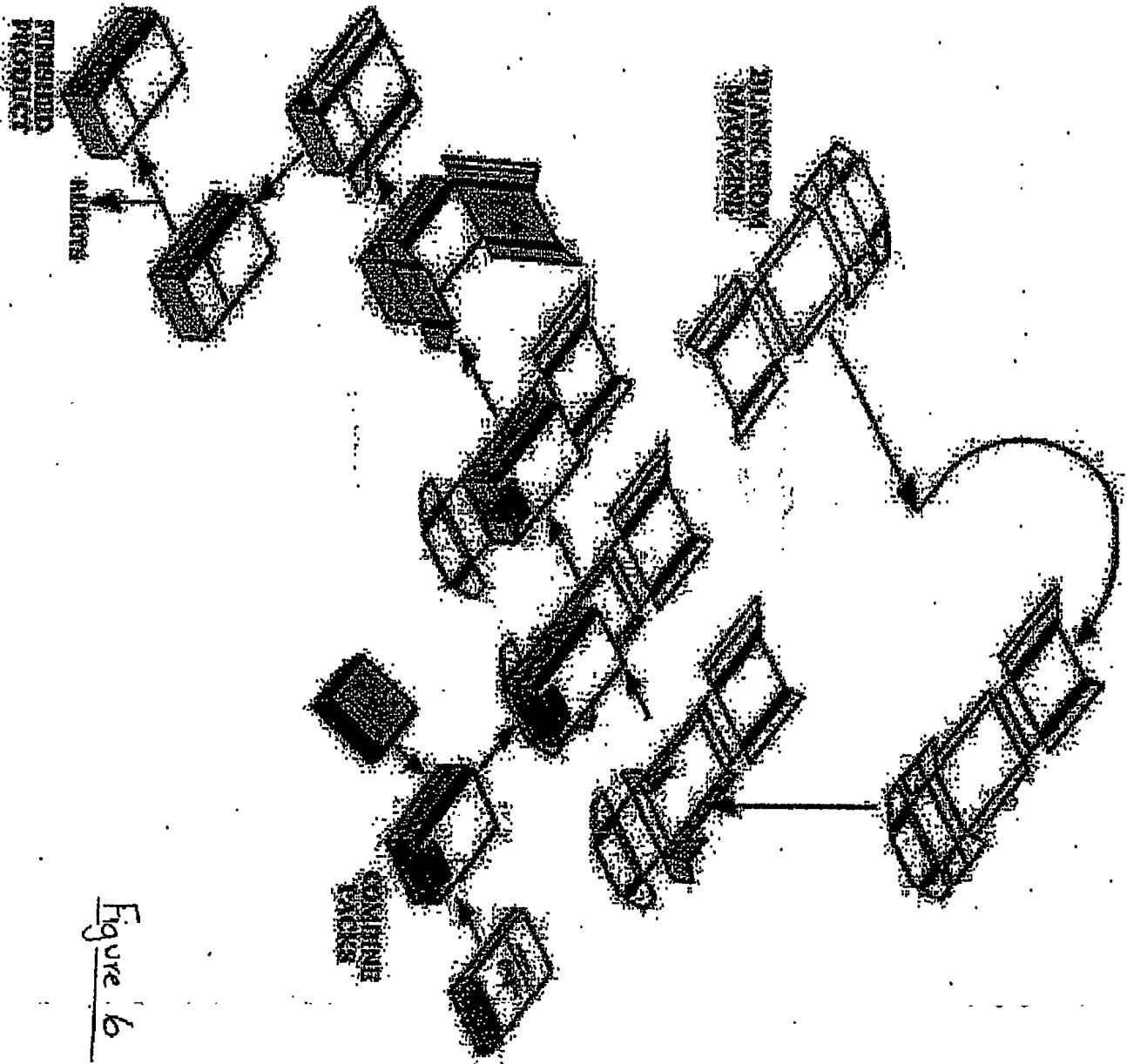


Figure 6

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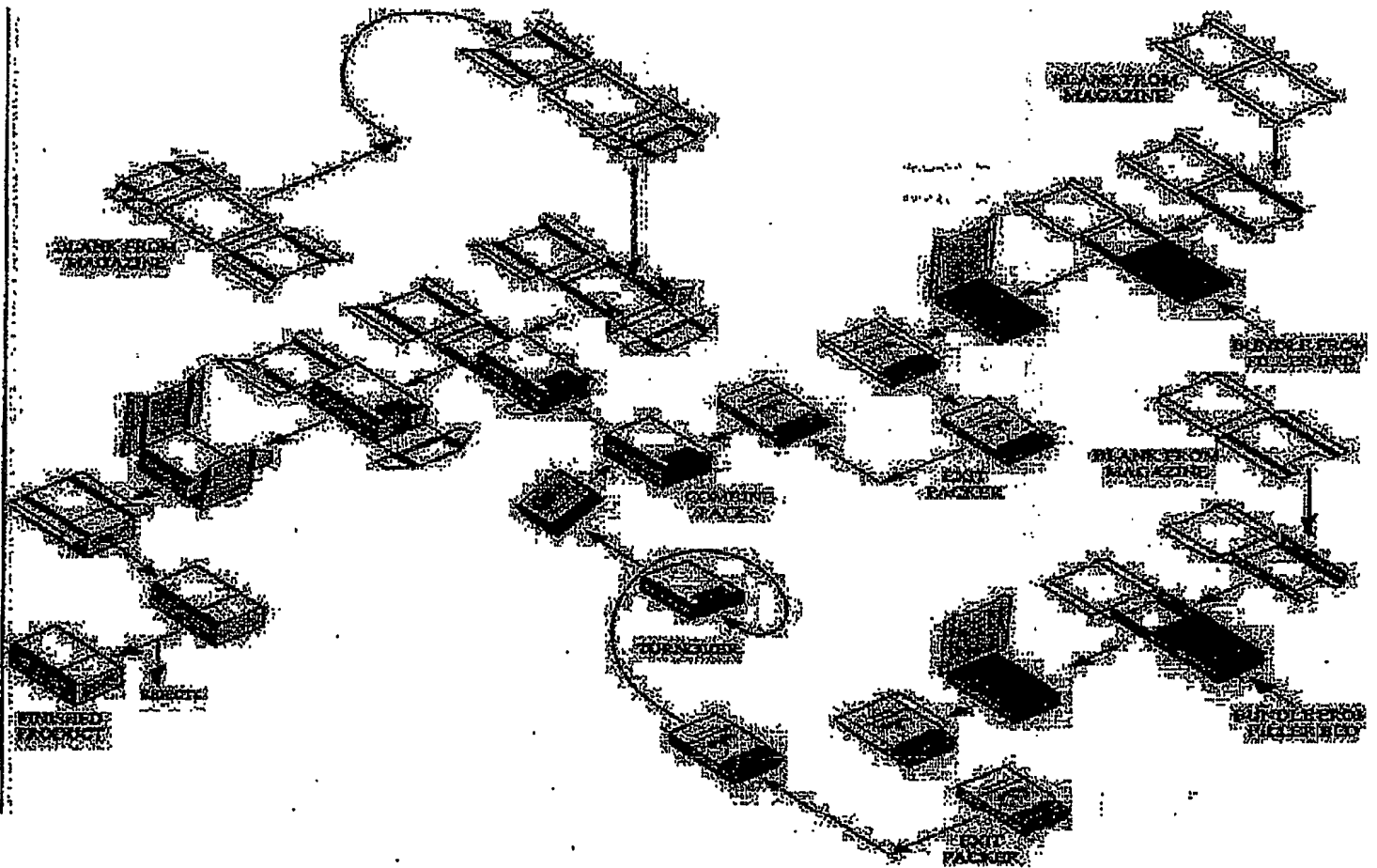


Figure 7

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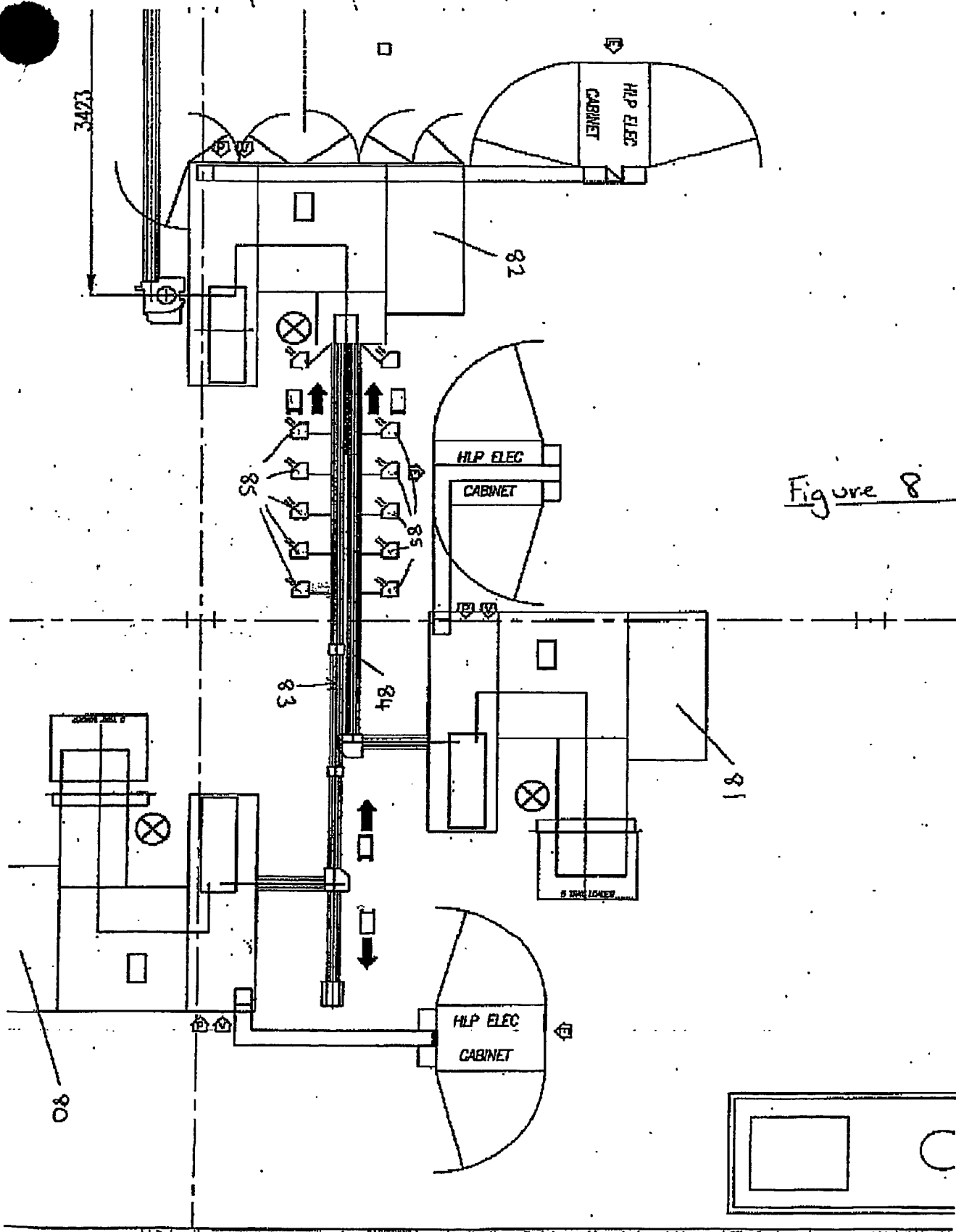


Figure 8

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